Linearizing Structures

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Abstract. The linearization of unboundedly many syntactic structures given a finite number of ordering instructions poses a compositionality problem similar to the semantic problem of determining the meanings of unboundedly many structures. We discuss this challenge and use various constructions such as Right-Node Raising that have been argued to involve multidominance—and that combine a remarkable productivity across and inside languages with a sensitivity to linear order—to tease apart different theories of linearization. We use data from such constructions, including new data provided in the paper, to argue in favor of a specific view of linearization first proposed in Bachrach & Katzir 2009, one in which linearization compatibility requirements are computed very locally, at every node in the structure.

1. Linearization and the Edge Restriction

1.1. Linearization as a Compositionality Problem

Given a finite number of linearization statements (in lexical entries, general grammatical principles, etc.), a speaker has to be able to determine the linearization of unboundedly many syntactic structures. This compositionality challenge—the linearization counterpart of the semantic problem of determining the meanings of unboundedly many structures—has been taken on by several different proposals in the literature, and it is our theoretical focus in this paper. We will argue for an approach first proposed in Bachrach & Katzir 2009 and summarized in (1).

(1)   Linearization compatibility requirements are computed locally, at every node. In particular, each node has information about the relative ordering of the terminals that it dominates, and the relative ordering is preserved in the mapping from daughters to mothers.

Our empirical evidence will come from what we will refer to as Generalized Node Raising (GNR) phenomena: cases in which two (or more) constituents have a subpart α in common (in some pretheoretical sense) and in which α appears only once rather than being repeated in each constituent. The following is a simple example (with α = *Sue*):[1]

[1] We will mark the single occurrence of α in boldface and the places where we might have expected to find it repeated with underscore. No theoretical claim is intended by this notation. To simplify the informal discussion in this section we will also refer to the position where we might have expected to find α as "the position of α," hoping that no misunderstanding will arise.

(2) John likes ___ and Bill hates **Sue.**

   Example (2) is an instance of Right-Node Raising (RNR; Ross 1967), a case of GNR in which the constituents are combined using coordination and in which α appears on the very right. RNR is probably the most familiar variety of GNR, but it is by no means the only one, and we will discuss other kinds of GNR in this work. GNR is highly productive, applying across a variety of languages (see Wilder 1999; Yatabe 2001, 2012; Duman 2003; Dwivedi 2003; De Vos & Vicente 2005; Kluck 2009; and Citko 2013 for a sample of GNR in different languages) and affecting a variety of elements—in a variety of positions—ranging from below the word level, through heads and phrases of different categories, to multiple constituents.
   The interest of GNR to theories of linearization arises from the combination of its high structural productivity with a sensitivity to the linear position of α, a sensitivity that we refer to as the Edge Restriction:[2]

(3) Edge Restriction (ER)
    a Either α's position is rightmost in all the nonrightmost constituents containing it, in which case it surfaces within the rightmost constituent;
    b. Or α's position is leftmost in all the nonleftmost constituents containing it, in which case it surfaces within the leftmost constituent.

   Violations of the ER are generally fatal. For example, although the grammatical sentence in (2) respects the ER, its variant in (4a) does not—that is, α = *Sue* is rightmost in both conjuncts but surfaces in the leftmost conjunct rather than the rightmost conjunct—and is ungrammatical. The situation is similar in (4b), in which α = *Sue* does surface in the rightmost conjunct but its position is medial in the leftmost conjunct rather than rightmost in it.[3]

(4) a. *John likes **Sue** and Bill hates ___.
     b. *John gave ___ presents and Bill kissed **Sue.**

   In section 2 we illustrate the productivity of GNR with its sensitivity to the ER, using new data in sections 2.6, 2.7, and 2.9 to complete the characterization of the pattern. In the remainder of the paper, we will use this pattern to argue for the framework proposed in Bachrach & Katzir 2009. This framework includes the

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   [2] The positional sensitivity of α in GNR was noted already by Ross (1967:175). Other early discussions include Koutsoudas 1971, Postal 1974, and Oirsouw 1983. The formulation of the ER in (3) is closely related to that in Wilder 1999. The status and proper formulation of the ER have been further investigated by Yatabe (2001, 2012), Abels (2004), Sabbagh (2007), and Bachrach & Katzir (2009), among others.
   [3] When it is possible to position α on the right (e.g., by Heavy-NP Shift, as in (i)), an ER violation can be avoided, allowing for a grammatical RNR configuration, as in (ii).

   (i) Joss will donate ___ to the library today **several old novels.**
   (ii) [Joss will donate ___ to the library today ___], and [Maria will donate to the library tomorrow **several old novels**].   (Sabbagh 2007:393)

See Kluck & De Vries 2013 for further discussion and references.

linearization principle in (1)—and developed in detail in section 3—in combination with a specific view on structure building (namely, one that allows multidominance, where α belongs simultaneously to both conjuncts) and on cyclic spellout. We compare the predictions of this framework with the complex pattern of linearization possibilities in GNR in section 4. In addition to accounting for the data presented in section 2, we note a prediction of the system concerning limitations on wrapping. In section 5, we show how a minimal extension of our system, again following Bachrach & Katzir 2009, can account for movement-like configurations. Section 6 concludes.

2. Establishing an Empirical Picture of GNR: Structural Productivity + Linear Sensitivity

In this section we review what we consider to be the main properties of GNR in view of the analyses proposed in the literature. Analyses of GNR can be grouped into three major families: movement, ellipsis, and multidominance (MD). Analyses in the movement family, including Ross 1967 and Sabbagh 2007, propose that GNR and leftward displacement are generated via the same mechanism and configuration (e.g., Internal Merge; Chomsky 2004). This means that, regardless of how α is analyzed within its containing constituents, there is also an additional, higher instance of α.[4] Analyses of the ellipsis family, including Wexler & Culicover 1980, Wilder 1997, Ha 2008, and Yatabe 2012, make a clear distinction between GNR and movement: GNR is assumed to be a result of phonological ellipsis rather than a specific syntactic configuration. For these analyses, there is no syntactic sharing of α within its containing constituents. Rather, there are two distinct instances of α, one in each conjunct, and only one of these instances is pronounced. Finally, analyses of the the MD family, including McCawley 1982, Wilder 1999, Abels 2004, and Bachrach & Katzir 2009 (followed here) hold that GNR is the result of syntactic sharing of α within its containing constituents (Parallel Merge, in the terminology of Citko 2005). The three kinds of analysis are not necessarily mutually exclusive, and some proposals in the literature have suggested that GNR is better treated as a hybrid phenomenon, relying on two or more of the three basic mechanisms.

2.1. Islands

As noted by Wexler & Culicover (1980:301), GNR crosses islands, thus posing a challenge to any attempt to derive GNR using the same mechanism used to derive leftward displacement:

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[4] A different approach in which much work on GNR has been carried out and in which GNR has been directly related to displacement is that of Categorial Grammar. Although nontransformational and not including movement operations as such, the mechanisms for deriving displacement effects in Categorial Grammar—Hypothetical Reasoning in Type-Logical Grammar (Lambek 1958; Morrill 1994, 2010), and type-shifting and composition combinators in Combinatory Categorial Grammar (Ades & Steedman 1982, Steedman 2000)—provide a rebracketing that is in many ways similar to that offered by syntactic movement. The use of these same mechanisms in Categorial Grammar accounts of GNR, as in Steedman 1985, 1987 and Whitman 2009, makes such accounts fit within the movement approach, both in terms of their successes and in terms of the challenges they face.

(5) a. [John knows a man [$_{RC}$ who hugged ___]], and [Mary knows a woman
          [$_{RC}$ who kissed **the new vice president**]].
     b. [John left [after you hugged ___]], and [Mary left [after you kissed **the new
          vice president**]].

These cases involve αs that are shared across barriers to movement: a relative
clause in (5a), and and adjunct island in (5b). The challenge posed by the island
insensitivity of GNR may seem like a reason to reject movement accounts quite
generally in favor of in situ approaches (either ellipsis or MD), but work by Sabbagh
(2007) has shown that a movement account can handle this challenge in principle
(although we will present other challenges that we believe Sabbagh's approach
cannot handle). Sabbagh builds on the architecture for cyclic spellout proposed by
Fox & Pesetsky (2005), according to which movement can freely reorder elements
within a phase, at the end of which the relative ordering between elements is frozen.
Sabbagh proposes that RNR is almost the mirror image of leftward movement. The
difference between RNR and leftward movement, according to Sabbagh, is that RNR
takes place after spellout and so may never reorder material within the phase. As a
consequence, for an element to be targeted by RNR it must already be at the right
edge of the RNR domain for some other reason. Because the RNR operation itself
never actually reorders α within its phase, it is inherently island insensitive, thus
allowing cases such as (5).

The only exception to the island-insensitivity of GNR that we are aware of is the
Coordinate Structure Constraint (CSC), as noted by McCawley (1982:101, fn. 11):

(6) *[Tom is writing an article on [Aristotle and ___]], and [Elaine has just
      published a monograph on [Mesmer and **Freud**]].

We return to the interaction of GNR with the CSC in section 5.4.4.

2.2. Beyond Phrases

The range of entities that can serve as α in GNR is wide. In (7a), based on Sabbagh
2007, α is below the word level (see Booij 1985, Toman 1985, and Wilder 1997). In
(7b), based on Abbott 1976 (see also Grosu 1976), α is a nonconstituent (here
composed of two independent constituents). In (7c), from Chaves 2007, α is a single
N head. And in (7d), from Wilder 1999, α consists of the final verbs from two
separate clauses.

(7) a. [Your theory over-___], and [my theory under-**generates**].
     b. [John borrowed ___ ___], and [Mary stole **[large sums of money] [from
          the bank]**].
     c. The difference between [an interesting ___] and [a tedious **teacher**] is this.

d. [Er hat einen Mann, [_{RC} der drei Hunde ___] ___] und [sie hat
   he has a   man   who three dogs   and she has
   eine Frau, [_{RC} die drei Katzen **besitzt**], **gekannt**].
   a   woman   who three cats   owns   known
   'He knew a man who owns three dogs, and she knew a woman who owns
   three cats.'   (Wilder 1999:(39))

All these cases involve αs that cannot be the target of processes such as fronting, extraposition, or ellipsis in the languages under consideration, which thus argues against reducing GNR to displacement or ellipsis.

2.3. *Beyond Coordination*

Although GNR often involves coordination, it has been noted by Hudson (1976) that this is not a requirement and that GNR is possible also outside of coordination (see Phillips 1996:56 and De Vries 2009:386 for further discussion):

(8) a. People who hate ___ often ridicule people who enjoy **songs by Elton John.**
   b. John destroyed ___ before Bill could read **the only copy of my dissertation.**

This argues against theories such as Beavers & Sag 2004 that write the properties of RNR directly into the rule of coordination.

An example from Wilder 1997 illustrates GNR with a combination of nonconstituents, below the word level, and noncoordination:

(9) We must distinguish [psycho-___] [from socio**linguistic claims**].
                                                     (Wilder 1997:87, (117))

2.4. *Identity*

In most cases of GNR, α must be identical morphosyntactically in its two positions. For example, (10a) cannot mean that Alice can see her face in the mirror but Bob cannot see his face in the mirror. Similarly, (10b) cannot mean that Alice can see her new suitcase but Bob cannot find his new suitcase.[5]

(10) a. Alice can ___, but Bob cannot **see his face in the mirror.**
    b. Alice can see ___, but Bob cannot find **his new suitcase.**

However, it has long been known that there are cases of GNR in which α does not seem to be fully identical in its two positions. In (11), α = *wakes up early every day* surfaces in the right conjunct with third-person morphology on the verb, which is

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[5] In principle, (10a) might be expected to have an analysis in terms of backward VP ellipsis, in which case the mismatch should be acceptable. We do not know why this is not possible in this case.

incompatible with the morphological requirements on the occurrence of the same verb in the leftmost conjunct (cf. the ungrammaticality of *I usually don't wakes up early*). Example (12), from Kluck 2009:118, shows a number mismatch in Dutch.

(11) I usually don't, but Alice **wakes up early every day.**

(12) Ben zei dat Anna, en Erik beweerde dat haar zussen **een huis**
      Ben said that Anna and Erik claimed that her sisters a house
      gekocht had/hadden.
      bought have-SG/have-PL
      'Ben said that Anna bought a house and Erik claimed that her sisters bought a house.'

    Nonidentity effects in GNR have been the subject of a growing body of literature (see, in particular, Barros & Vicente 2011 and Larson 2012). At present, such effects seem equally challenging to all existing accounts. In particular, whereas morphological mismatches in GNR can be surprising for MD and movement accounts, the identity requirements on α are still considerably stricter than those in ellipsis. Recall (10a), for example. Although it is impossible to construe α as *see her face* in the first conjunct and as *see his face* in the second in this case of GNR, the same kind of mismatch is perfectly acceptable in the ellipsis example in (13).

(13)   Bob cannot see his face in the mirror, but Alice can ~~see her face in the mirror~~.

    We leave identity and nonidentity effects as an open question.

2.5. *GNR Interacts with Hierarchy*

As noted by McCawley (1982:104, fn. 12), a quantificational α can take wide scope over coordination in RNR (see (14a)). As Bošković & Franks 2000 discuss, however, the same is not true for coordination in which the quantifier surfaces in all conjuncts (see (14b)). Wide scope over coordination is also not generally licensed by ellipsis (see (14c)).

(14) a. [Al bought _] or [Ed stole **every book on this shelf**]. $\checkmark \forall \gg \vee$

      b. [Al bought every book on this shelf] or [Ed stole every book on this shelf]. $*\forall \gg \vee$

      c. [Al bought every book on this shelf] or [Ed did ~~steal every book on this shelf~~]. $*\forall \gg \vee$

    As discussed by Abels (2004), Bachrach & Katzir (2007), and Sabbagh (2007), among others, GNR may also allow α to take scope that crosses scope islands. We

illustrate with (15), based on Sabbagh 2007, in which GNR allows α to take exceptional scope outside of a relative clause.

(15) a. [Kim knows a woman who teaches _], and [John knows a man who wants to speak **every Germanic language**]. ✓∃ ≫ ∀, ✓∀ ≫ ∃

 b. [Kim knows a woman who teaches every Germanic language], and [John knows a man who speaks every Germanic language]. ✓∃ ≫ ∀, *∀ ≫ ∃

 c. [Kim knows a woman who teaches every Germanic language], and [John knows a man who doesn't ~~teach every Germanic language~~]. ✓∃ ≫ ∀, *∀ ≫ ∃

 d. John knows a man who wants to speak every Germanic language. ✓∃ ≫ ∀, *∀ ≫ ∃

The interaction of GNR with hierarchy poses a challenge for ellipsis accounts. Under standard assumptions regarding the architecture of grammar, phonological ellipsis itself cannot feed syntactic operations. And empirically, wide scope does not seem to be possible when two instances of α are syntactically present, either overtly (as shown by (14b) and (15b)) or covertly (as shown by (14c) and (15c)). As (14a) and (15a) show, however, GNR can do exactly that.

Bachrach & Katzir (2009) provide evidence that RNR can also feed overt syntactic movement to the left:[6]

(16) a. **Which topic$_i$** did [John buy _] or [Mary steal **every book about** t_i]? ✓∀ ≫ ∨

 b. **Which animal$_i$** does [John know a man who wrote _] and [Mary know a woman who published **an encyclopedia article about** t_i]?

In (16a), the wide scope of α over coordination suggests that the sentence indeed involves RNR combined with extraction out of α, rather than ATB movement of 'which topic' combined with backward DP ellipsis. This is so because, as discussed earlier, ellipsis does not license wide scope over coordination (and, moreover, DP ellipsis is not generally possible in English). In (16b), extraction from α crosses conjunct-internal islands, which is similarly problematic for an alternative account in terms of ATB of 'which animal' combined with backward DP ellipsis.

Note that the examples in (16) pose a challenge to Sabbagh's (2007) account. On Sabbagh's account, the contrast between the island sensitivity of leftward movement

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[6] Examples such as (16b) have been investigated by Bachrach & Katzir (2009), who argue that RNR can improve extraction across certain islands. Early accounts have suggested that this kind of improvement is impossible (see especially Wexler & Culicover 1980 and McCawley 1982). More recently, Ha (2007) has challenged Bachrach & Katzir 2009's empirical claim, although without providing evidence. Kluck & De Vries (2013), while not challenging Bachrach & Katzir's claim, suggest that it does not extend to Dutch based on the following example:

(i) ***Over welke oorlog** ontmoette [Joop een vrouw die een boek schreef] en [Mieke een
  about which war met Joop a woman who a book wrote and Mieke a
  man die een boek las]?
  man who a book read
  'About which war did Joop meet a woman who wrote a book, and Mieke meet a man who read a book?'

and the island insensitivity of GNR is attributed to the string vacuity of GNR. Islands at least in some cases, are taken to arise from the freezing of the relative linear order of elements; α in GNR is allowed to cross islands in its movement to a position outside the conjunction because this movement does not reorder material within the conjuncts. The problem that examples such as those in (16) pose for this explanation is that they show that subsequent *wh*-movement must be able to reorder α or parts of it with respect to the conjuncts.

2.6. Restricted Wrapping

The ER, as stated in (3), does not prevent the appearance of α in a nonperipheral position within the rightmost containing constituent as long as it has a rightmost position in all nonrightmost containing constituents. Such configurations—Right-Node Wrapping (RNW) in the terminology of Whitman 2009—have a complex empirical status. Some cases of RNW are clearly unacceptable:

(17)   *[We have recently promoted ___], and [the HR manager who hired **Bob** is consequently very pleased].

   On the other hand, a variety of RNW cases have been reported in the literature as grammatical (see Wilder 1999, 2008; Whitman 2009; and Hartmann & Schmitt 2013):[7]

(18) a. After using dishes, please [wash ___], [dry ___], and [put **them** away in the proper place].
      b. There is little incentive for the contractor to [reduce ___] or [keep **costs** down].

   Wrapping poses a challenge for displacement accounts of GNR because the position of α within the rightmost conjunct clearly does not c-command the base positions of α within the nonfinal conjuncts. Wrapping is challenging for displacement accounts also because movement is generally symmetric: the constraints applying to all positions in across-the-board (ATB) movement are the same. Wrapping, on the other hand, is asymmetric: in RNW, the base position of α must be final in all nonfinal conjuncts but can be nonfinal in the final conjunct.[8] Thus, it is hard to see how a movement account could generate the acceptable (19a) and (20a) without also generating the unacceptable (19b) and (20b).[9]

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[7] Kluck & Vries (2013) argue against an RNW analysis of the following example, from Wilder 2008:

   (i) John should fetch and give the book to Mary.

They suggest—correctly, we believe—that (i) can be analyzed in terms of coordination of the verb. Such an account, however, is not available for the cases in (18).

[8] Indeed, Sabbagh (2014) has proposed that these structures are not derived via movement but via ellipsis. However, as we will discuss, ellipsis offers no handle on the ER. Sabbagh's proposal, then, would require an additional, non-movement-based account to enforce the ER in the case of wrapping.

[9] The examples in (19) are based on Whitman 2009.

(19) As for the dishes,
     a.   John washed ___ and put **them** away.
     b. *John put ___ away and then got **them** back out.

(20) a.   John should congratulate ___ and invite **Mary** to dinner.
     b. *John should give ___ a present and invite **Mary** to dinner.

2.7. On the Left

As shown in detail by Yatabe (2001, 2012), cases in which α is on the left—rather than on the right—can be seen as Left-Node Raising (LNR), a mirror image of RNR on the left. Yatabe demonstrates this with examples such as (21), where α = *yonde* 'read-GER'.[10]

(21) [**Yonde**   ageta   hito]   to   [___ agenakatta hito]   ga   ita.
       read-GER give-PAST person and give-NEG.PAST   person nom be-PAST
       'There were people who gave (him/her) the favor of reading (it) (to him/her) and people who didn't.'   (Yatabe 2001:(3))

Yatabe notes that α in (21) is an infinitival complement, rather than a nominal one, and that such elements cannot be replaced by a null anaphor in Japanese. Its absence in the second conjunct is significant in establishing the example as a mirror image of RNR.

    Yatabe provides multiple other examples of LNR that argue for its analysis as a left-edge parallel of RNR. We present one more argument, in (22) (= Yatabe 2001:(5)), that involves partial sharing of the lefthand member of a compound: the compound is the verb *omoidas* 'recall', which is composed of *omoi* '(to) think' and *das* '(to) get (something) out', and α = *omoi* '(to) think'. Like (21), (22) argues against an analysis in which α is elided within the second conjunct, given that ellipsis is not generally available inside compounds. Additionally, it also argues against any form of a movement analysis, as well as against an analysis in terms of a low coordination of the remnant.

(22) a. [Omoi-das-u   ka] [omoi-das-an-ai   ka] ga   mondai da.
       [think-get-PRES Q   [think-get-NEG-PRES Q   NOM problem be-PRES
       'Whether (you) can recall (it) or (you) cannot recall (it) is the problem.'
     b. [**Omoi**-das-u   ka] [___ das-an-ai   ka] ga   mondai da.
       [think-get-PRES Q   get-NEG-PRES   Q   NOM problem be-PRES
       'Whether (you) can recall (it) or (you) cannot recall (it) is the problem.'

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[10] See Yatabe 2001:(15) for a similar example without coordination, along the lines of Hudson's (1976) examples.

Nakao (2009) and Abe & Hornstein (2012) discuss additional evidence that supports Yatabe's treatment of LNR as the left-edge parallel of RNR.[11] This evidence includes matching requirements, the possibility of distributive scope, and island insensitivity. We refer the reader to these works for the arguments and only briefly illustrate here the argument from mismatches. As mentioned earlier, RNR generally requires α to be identical in its different positions. Nakao (2009:221ff.) provides evidence that mismatches in LNR in Japanese are similarly degraded, as the contrast in (23) illustrates. Example (23a) is an attempted case of LNR, but owing to the mismatch between the accusative assigned by *saso* 'invite' and the dative assigned by *kai* 'write', no case morphology on Mary can simultaneously satisfy the requirements of the verbs in both conjuncts. In the otherwise similar (23b), by contrast, argument drop in the second sentence is possible despite the different case.[12]

(23) a. ??**Mary-o/ni**   John-ga   dansu-ni sasoi, Tom-ga   rabu retaa-o
       Mary-ACC/DAT John-NOM dance-to invite Tom-NOM love letter-ACC
       kai-ta.
       write-PAST
       '(To) Mary, John invited to a dance and Tom wrote a love letter.'

    b. **Mary-o**   John-ga   dansu-ni saso-ta.   Tom-ga   rabu retaa-o
       Mary-ACC   John-NOM dance-to invite-PAST Tom-NOM love letter-ACC
       kai-ta.
       write-PAST
       'Mary, John invited to a dance. Tom wrote (her) a love letter.'

As a final point of comparison between LNR and RNR, we note that, in symmetry with its righthand variant, the lefthand variant of GNR allows wrapping, with α having a leftmost position within all nonleftmost-containing constituents but appearing in a nonperipheral position within the leftmost-containing constituent. The following, contributed by Shûichi Yatabe (p.c.), illustrates:

(24) [Sukoshi wa **omoi**-das-u   no ka] [___ das-an-ai   no   ka] ga
    at least a little think-get-PRES NMLZ Q get-NEG-PRES NMLZ Q   NOM
    mondai   da.
    question be-PRES
    'The question is whether (you) recall (it) at least a little, or you don't recall (it).'

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[11] Like Yatabe, Nakao and Abe & Hornstein focus on Japanese. See Chung 2010 for evidence that Korean, too, has LNR. The literature provides no clear-cut cases of LNR in English, and we note that the position of conjunction at the left edge of the rightmost conjunct means that, if conjunction is visible for the ER, LNR in English would violate the ER. However, a reviewer suggests that subword deletion, such as *half-brothers and sisters* or *anti-aging and wrinkle creams* (discussed in Chaves 2008), might be instances of LNR. We also note that Huybregts & Van Riemsdijk (1985) have argued for an LNR analysis of certain configurations in Dutch.

[12] To account for the unavailability of an argument-drop analysis for (23a), Nakao appeals to an economy condition, due to Ishii 1991, that reserves argument drop as a last resort operation. As far as we can tell, a variant of this explanation can be adopted within the present framework, but we do not pursue this matter here.

As Yatabe (p.c.) notes, the phrase *sukoshi wa* 'at least a little' is not semantically plausible if analyzed as part of α, thus suggesting that the example involves LNW of *omoi* alone.

2.8. *Center-Node Raising*

As pointed out by Yatabe (2012) and others, various accounts of GNR predict an apparently nonexistent phenomenon of center-node raising. For example, it is impossible to turn *John met Mary, and Mary laughed* into either (25a) or (25b).[13]

(25) Impossible for *John met Mary, and Mary laughed*
   a. *John met **Mary** and laughed.
   b. *John met and **Mary** laughed.

Because the conjunction attaches to the rightmost conjunct in English, (25a) would have to be analyzed as involving an α that surfaces within the leftmost conjunct but has a nonleftmost position in the rightmost conjunct, thus violating the ER. The impossibility of the intended parse is therefore unproblematic. On the other hand, (25b) respects the ER as an instance of RNW, which makes its ungrammaticality surprising. The account we present rules out (25b) not directly by the mechanism deriving the ER but rather through the interaction of linearization and cyclic spellout.[14]

2.9. *Restriction by the ER*

Although GNR is highly productive, it is also severely constrained by the ER. Minimal variants of good righthand cases of GNR in which we make it impossible for α to have a position in the right end of a nonrightmost constituent containing it, thus violating the ER, are generally ungrammatical. Consider, for example, (26a), a variant of (8a) in which α = *Elton John* is the indirect object in a double-object construction in the subject and consequently has to appear before the direct object—and thus, crucially, prefinally—within that constituent; (26b), a variant of (9) in which α = *linguistic claims* originates before a PP, and thus prefinally, within the first constituent that shares it; (26c), a variant of (7d) in which α = *besitzt* 'owns' appears

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[13] Of course, (25a) is perfectly grammatical on the irrelevant parse in which the VP is conjoined.

[14] Center-node-raising configurations that do not involve wrapping are harder to construct. Yatabe ((2012:23)) discusses the following example:

(i) *John met **Mary** laughed and Bill was surprised. (Cf. *John met Mary, Mary laughed, and Bill was surprised.*)

In (i) there is no overt conjunction between the first two conjuncts, and α = *Mary* appears rightmost within the first conjunct and leftmost within the second. This configuration is thus licensed by either of the two clauses of (3), which makes the ungrammaticality of this configuration surprising from the perspective of the ER. As a reviewer notes, however, (i) involves an α that is shared between just two out of three conjuncts, a configuration that has been known since Ross 1967:176–177 to be ungrammatical even in RNR, thus making the example uninformative. We return to Ross's condition briefly in section 5.4.4.

penultimately within the first conjunct; and (26d), a variant of (18a) in which α = *them* is a pronoun and thus cannot have a final position in the first conjunct. Whereas the original, ER-respecting variants are all grammatical, the ER-violating variants in (26) are all ungrammatical.

(26) a. *A lady who sent ___ hate mail ridiculed a lady who admires **Elton John.**

　　 b. *We must distinguish psycho-___ about register from socio**linguistic claims** about identity.

　　 c. *[Er hat einen Mann, der drei Hunde ___ getroffen], und [sie hat
　　　　he has a　　　man　 who three dogs　　　　met　　　and　she has
　　　　eine Frau,　die　drei Katzen **besitzt,** gekannt].
　　　　a　　 woman who three cats　　owns　 known.
　　　　'He met a man who owns three dogs, and she knew a woman who owns three cats.'

　　 d. *After using dishes, please [put ___ away in the proper place] and [cover **them**].

The ER is stated as a symmetric condition, and indeed the lefthand variants of GNR are sensitive to it. Consider (27), for which we thank Shûichi Yatabe (p.c.). In this example, α = *omoi* 'think', being part of a compound, can only have a conjunct-medial position within the rightmost conjunct. According to the ER, then, (27) should be bad. And indeed, regardless of whether α appears in the leftmost position within the leftmost conjunct or whether it is wrapped within it, the result is ungrammatical.

(27) *[(Sukoshi mo) **omoi**-das-an-ai　　no　ka] [sukoshi wa　　___-das-u
　　　　even a little　think-get-NEG-PRES NMLZ Q　 at least a little　　　-get-PRES
　　 no　ka] ga　 mondai da.
　　 NMLZ Q　NOM question be-PRES
　　 'The question is whether (you) don't recall (it) (even a little) or whether you recall (it) at least a little.'

The ER poses challenges for ellipsis, movement, and most MD accounts of GNR. Ellipsis accounts have no handle on the ER. To our knowledge, no account of GNR in terms of ellipsis has derived this property, and it is worth noting that in English neither forward nor backward ellipsis is constrained by such a condition:

(28)　 a. I didn't drink wine because Steve told me not to ~~drink wine~~ yesterday.

　　 b. Because Steve told me not to ~~drink wine~~ yesterday, I didn't drink wine.

The ER is problematic also for movement accounts, given that other displacement phenomena do not show a similar signature. To our knowledge, the only movement account to address the ER is that of Sabbagh (2007), whose stipulation that RNR occurs post-spellout goes a long way toward capturing the linearization challenge: α must be rightmost in all its positions in order to be ATB-moved to the right. However,

Sabbagh's reliance on post-spellout movement predicts that subsequent leftward movement of α or elements within it should be impossible. As the examples in (16) show, this prediction is incorrect. And as in other movement accounts, Sabbagh's proposal also undergenerates with respect to the ER in precluding any kind of wrapping.

The ER poses a challenge also for various accounts of GNR in terms of MD, such as Wilder 1999, 2008 and De Vries 2009. Wilder proposes to make Kayne's (1994) LCA sensitive to MD. The original principle orders all the leaves dominated by a node *X* before all leaves dominated by any node *Y* asymmetrically c-commanded by it. In Wilder's version, multidominated leaves in *X* are exempt from this ordering requirement. Although Wilder's account captures many aspects of the ER—in particular, it correctly predicts the availability of wrapping in English—it both undergenerates and overgenerates. It undergenerates in being committed to the linearization of shared material on the right, thus targeting only the righthand part of the ER and having no obvious way to capture LNR. It overgenerates, as pointed out by Sabbagh (2007), by wrongly predicting RNR out of nonedge positions within nonfinal conjuncts as long as the (pronounced) right edge of these conjuncts is not asymmetrically c-commanded by α:

(29) a. *[Joss edited one review ___ for Blackwell], and [Maria edited two
           reviews **of my new book** for Oxford].   (Sabbagh 2007)
      b. *[A man who loved ___ danced the night away] and [a woman who hated
           the recent song by Elton John went home].

De Vries (2009) proposes a different linearization procedure, in terms of a left-to-right graph-traversal algorithm. The algorithm is sensitive to the MD status of a node so that a node with multiple parents is linearized either at the highest position (in case of Internal Merge) or in the rightmost position when no highest-position exists (as in Parallel Merge). This algorithm captures part of the ER: in cases of RNR, it correctly predicts that α must be pronounced within the final conjunct. However, it offers no handle on LNR, in which α must appear on the left, rather than on the right. Moreover, it does not capture the requirement that α originate in final positions in all nonfinal conjuncts, thus failing to enforce the ER. For example, it incorrectly predicts that (4b), repeated here as (30), should be grammatical.

(30) *John gave ___ presents and Bill kissed **Sue.**

2.10. Interim Discussion

The combination of structural productivity with the linear restrictiveness of the ER is a challenge to ellipsis, movement, and MD accounts alike. The apparent incompatibility of the different parts of this pattern has motivated several hybrid approaches—in particular, Yatabe 2001, 2012; Chaves 2007; Barros & Vicente 2011; and Sabbagh 2014—in which GNR is derived via two or more distinct mechanisms (e.g.,

movement and ellipsis), each responsible for a subset of the empirical phenomena. To date, however, all hybrid approaches in the literature rely on at least one mechanism (typically ellipsis) that does not have a handle on the ER, thus leaving the challenge open. In the remainder of the paper we look at the details of the framework of Bachrach & Katzir 2009, based on the linearization principle in (1) along with MD and cyclic spellout, which is the only approach we are aware of that can handle this pattern.

3. Linearization through Local Compatibility Checks

According to (1), linearization is computed through a local, compositional process in which the linearization information at a mother node is determined by a mapping from the linearization information in its daughters. We will try to show that this compositional view on linearization allows us to understand the ER as a result of a general compatibility check: the ordering specified in the mother must be compatible in some informal sense with the ordering in each of its daughters. The ER-violating (4a) (= *John likes **Sue** and Bill hates ___*), for example, will fail the compatibility check because α = *Sue* appears after *hates* in one of the daughters (specifically, the rightmost conjunct) but before *hates* in the mother. Similarly, the ER-violating (4b) = (**John gave ___ presents and Bill kissed Sue*) will fail the compatibility check by having α precede *presents* in one daughter (this time the leftmost conjunct) but follow *presents* in the mother. In the ER-respecting (2) (= *John likes ___ and Bill hates Sue*), however, the position of α with respect to the elements in each conjunct seems compatible with its position relative to the same elements in the mother. In the remainder of this section, we will make this informal notion more precise, following Bachrach & Katzir 2009, and show how it derives the ER from general considerations of compatibility rather than stipulate it as a separate principle.

3.1. A Preliminary Notion of Linearization

Before approaching GNR, let us look at the simpler case in which two constituents that have no material in common combine to form a larger constituent (External Merge, in the terminology of Chomsky 2004). In the absence of sharing, compatibility is easy to enforce by ensuring that the mapping from daughters to mothers follows two requirements. First, in the linearization of the mother, any element mapped from the leftmost daughter appears to the left of any element mapped from the rightmost daughter. Call this requirement *Universal Alignment*.[15] And second, as mentioned earlier, the relative ordering of elements within each daughter is preserved by the mapping to the mother. Call this second requirement *Conservativity*.

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[15] Universal Alignment, which we will abandon shortly in favor of a weaker requirement, has been assumed in one way or another throughout most of the history of generative grammar, including in frameworks such as Kayne 1994 and Fox & Pesetsky 2005 that depart from more traditional approaches to linearization in other ways.

In order to help in identifying the predictions of the system, let us make the linearization notions under discussion more explicit. Every node X in the structure is associated with a list, which we refer to as the *D-list* for X, that contains information regarding the linearization of the terminals dominated by X; the observed order of phonologically overt material follows the D-list of the root.[16] We define D-lists through a base condition for terminals in (31) and an inductive step in (32). The possible D-lists of a node are determined compositionally: if X is a terminal node, the D-list of X is $<X>$; if X has daughters, the D-list of X is determined by a function f, constrained as in (32), that maps positions on the D-list of the daughter nodes of X onto positions in the D-list of X. If f takes a position i in a daughter to a position j in a mother, the terminal appearing in the i'th position in the D-list of the daughter and the terminal appearing in the j'th position in the D-list of the mother must be the same.

(31) Linearization Terminal Condition
       If X is a terminal, then the D-list for it is $<X>$.

(32) Linearization Mapping Condition (Preliminary version, to be replaced in (35))
       In ordering $A = <a_1,\ldots,a_m>$ to the left of $B = <b_1,\ldots,b_n>$ as daughters of the same mother, the following must hold of the mapping function f:[17,18]
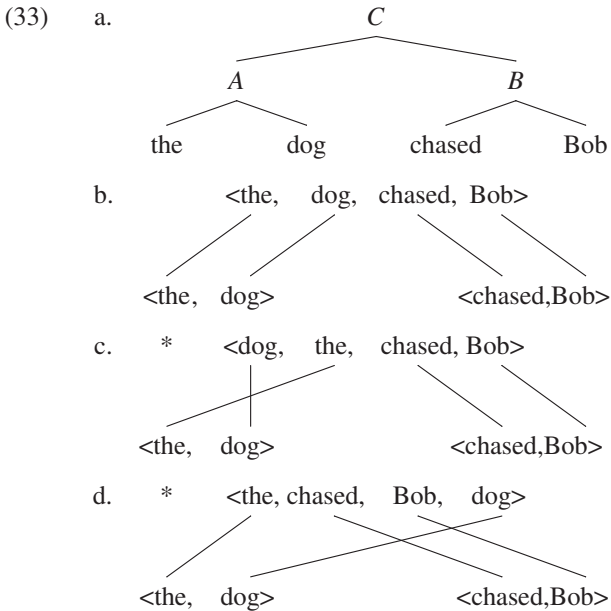   a. Universal Alignment: $f(a_i) \leq f(b_j)$ for all $1 \leq i \leq m$ and $1 \leq j \leq n$
       b. Conservativity: $f(a_1) \leq f(a_2) \leq \ldots \leq f(a_m)$ and $f(b_1) \leq f(b_2) \leq \ldots \leq f(b_n)$

As an illustration, consider the tree in (33a) and the question of how the linearization in the nodes marked as A and B is mapped onto the linearization in their mother node C. The diagram in (33b) shows an intuitive mapping that respects both Universal Alignment and Conservativity. The diagram in (33c) shows an ungrammatical mapping that respects Universal Alignment but violates Conservativity. The diagram in (33d) shows another ungrammatical mapping, this time one that respects Conservativity but violates Universal Alignment.

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[16] Within Head-Driven Phrase Structure Grammar (HPSG; Pollard & Sag 1994), a similar notion of *order domains* was introduced by Reape (1993) (see also Kathol & Pollard 1995) and used for GNR by Yatabe (2001, 2012) and Beavers & Sag (2004).

[17] To simplify notation, we wrote f as taking elements in the relevant D-lists. As mentioned, however, f takes *positions* on D-lists (of daughters) and maps them onto positions on D-lists (of the mother). Within the immediate context, this distinction does not matter, but in the context of Internal Merge, discussed in section 5, it does, given that we will consider allowing for multiple occurrences of incompletely dominated material on a single D-list.

[18] In anticipation of the need to linearize MD structures we employ a weakly antisymmetric precedence $\leq$ rather than a strict antisymmetric precedence $<$. This choice makes no difference for the linearization of MD-free structures.

(33)   a.

```
                          C
              ┌───────────┴───────────┐
              A                       B
          ┌───┴───┐             ┌─────┴─────┐
         the     dog         chased       Bob
```

b.

```
              <the,  dog,  chased,  Bob>
           ┌────┴────┐        ┌────┴────┐
       <the,  dog>           <chased,Bob>
```

c.   *

```
              <dog,  the,  chased,  Bob>
           ┌────╳────┐        ┌────┴────┐
       <the,  dog>           <chased,Bob>
```

d.   *

```
              <the, chased,  Bob,  dog>
           ┌────┐        ╳
       <the,  dog>           <chased,Bob>
```

3.2. Linearizing GNR

If, as argued by Sampson (1975), Karlgren (1976), and McCawley (1982), among others, *A* and *B* may share a subconstituent *x*, Universal Alignment can lead to contradictions: as part of both *A* and *B*, *x* will have to be ordered simultaneously both before and after material to its right in the leftmost conjunct and material to its left in the rightmost conjunct.[19] The structural configuration is illustrated in (34a), a schematic structure for GNR following McCawley 1982, Wilder 1999, Bachrach & Katzir 2009, and others.[20]

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[19] If we had used < rather than ≤ in (32), contradictions would have been even more pervasive, given that *x* would have had to be linearized before itself regardless of whether *A* is to be linearized before *B* or after it and of whether either constituent contains additional material.

[20] Parallel Merge results in a configuration in which the mothers of the remerged element are not totally ordered by dominance. MD provides a distinction between complete dominance and incomplete dominance (see Wilder 1999, Gärtner 2002, and Bachrach & Katzir 2009). In (34a), for example, *A* completely dominates *a*, and *B* completely dominates *b*, but each only incompletely dominates *x*, which the two nodes share. The first node that completely dominates *x* is *C*. We provide a formal statement of complete and incomplete dominance in (43).

(34)　a.

$$C$$

$$A \qquad\qquad B$$

$$a \qquad\qquad b \qquad x$$

　　b.

$$< a, \quad b, \quad x >$$

$$< a, \quad x > \qquad\qquad < b, \quad x >$$
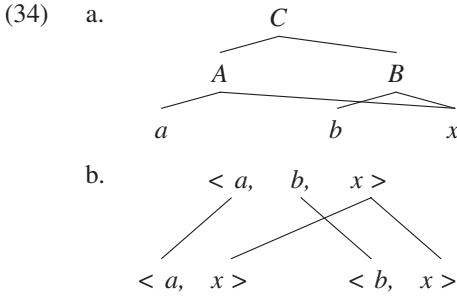
It has been argued in the literature—see McCawley 1982, McCloskey 1986, Wilder 1999, Abels 2004, and Bachrach & Katzir 2007, 2009—that Parallel Merge is necessary for an appropriate account of RNR. More recently, Chung 2010 has argued for Parallel Merge as an account of LNR. We believe that these arguments hold for GNR quite generally. If these arguments are correct, however, the problem for linearization posed by the combination of Parallel Merge and Universal Alignment must be addressed. The proposal in Bachrach & Katzir 2009, followed here, rests on the replacement of Universal Alignment in (32a) with a weaker form of alignment, which we refer to as Edge Alignment and state in (35a). Rather than requiring all the elements of A to precede all elements of B we will require only that the respective edges (left and right) of A precede the respective edges of B:

(35)　Linearization Mapping Condition　　　　　　(Final version, revised from (32))
　　　In ordering $A = <a_1,\ldots,a_m>$ to the left of $B = <b_1,\ldots,b_n>$ as daughters of the same mother, the following must hold of the mapping function f:
　　　a.　Edge Alignment: (replaces (32a)) $f(a_1) \leq f(b_1)$ and $f(a_m) \leq f(b_n)$
　　　b.　Conservativity: (= (32b)) $f(a_1) \leq f(a_2) \leq \ldots \leq f(a_m)$ and $f(b_1) \leq f(b_2) \leq \ldots \leq f(b_n)$

This weakened requirement allows (34a) to be linearized, as shown in (34b): we only require that a weakly precede b (which it does) and that x weakly precede itself (which it also does). In particular, x is no longer required to precede b (which it doesn't). Although clearly weaker than Universal Alignment—and, in fact, too weak to stand on its own, as we discuss in section 3.3—Edge Alignment is still restrictive. For example, the configuration we discussed in the context of Universal Alignment, in which the elements of one node are fully wrapped by those of its sister node, is still ruled out:

(36)　Edge Alignment not respected (wrapping):

$$*\ \ < a_1, \quad b_1, \quad b_2, \quad a_2 >$$

$$< a_1, a_2 > \qquad\qquad < b_1, b_2 >$$
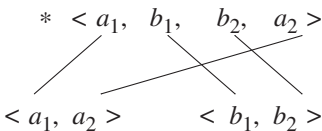
As a concrete instantiation of (36), consider again (33a) and in particular the ungrammatical mapping in (33d) (= *The chased Bob dog*). The right edge of *A* in this linearization of (33a) follows the right edge of *B*, as visualized by the crossing of the lines from a_2 and b_2. This crossing violates Edge Alignment, which thus correctly rules it out. We will examine cases in which Edge Alignment seems too weak to rule out impossible orderings. We will argue that this is in fact a fortunate state of affairs—because this weakness will allow GNR to be linearized—and that the appropriate way to rule out interleaving in the MD-free case is through the interaction of linearization with cyclic spellout.[21]

We have suggested that Universal Alignment should be weakened to Edge Alignment. We have not proposed any kind of weakening for Conservativity, and in fact we think it should stay exactly as in its traditional conception. It is the restrictiveness of Conservativity that will provide us with the ER, as we will try to show later. Let us start by considering several linearization mappings for the structure in (37), starting from the case of RNR in (38).

(37)
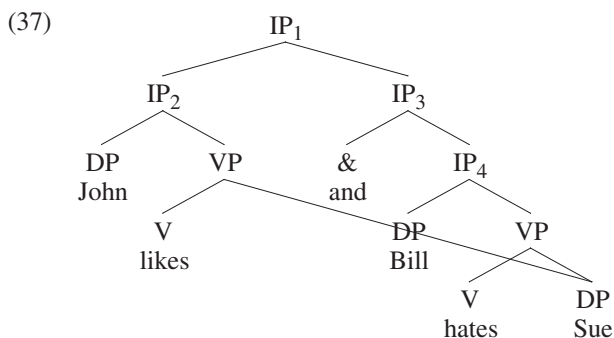
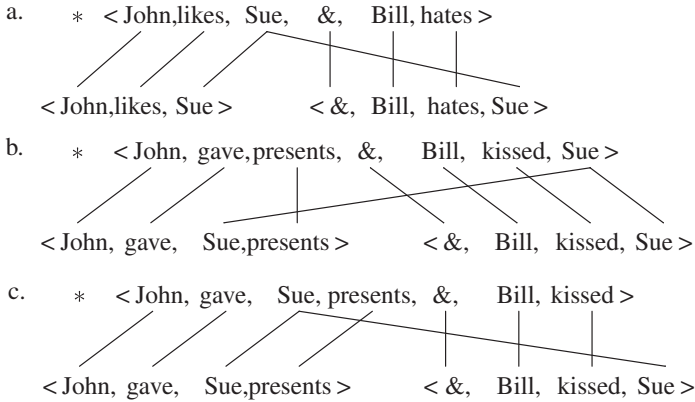(38)   Conservativity respected: no ER violation
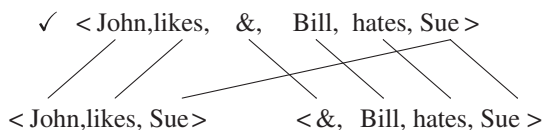
The grammatical (38) respects both Edge Alignment and Conservativity. Because we have not modified Conservativity, its violations continue to be fatal: whenever lines coming up from the same daughter cross, as in (39a), (39b), and (39c), the result is ungrammatical. We can thus see, albeit informally, how the ER arises as a by-product of the compatibility check of Conservativity. When α surfaces within the leftmost conjunct but is nonleftmost in the rightmost conjunct, as in (39a) and (39c), the result violates Conservativity with respect to the rightmost conjunct. If, on the

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[21] The interaction of linearization with cyclic spellout will also rule out some problematic interleaving cases that do involve MD, but other potentially problematic cases will remain possible. We will not provide a full characterization of interleaving in MD in this paper.

other hand, α is linearized within the rightmost conjunct but does not have a position on the right edge of the leftmost conjunct, as in (39b), the result violates Conservativity with respect to the leftmost conjunct.
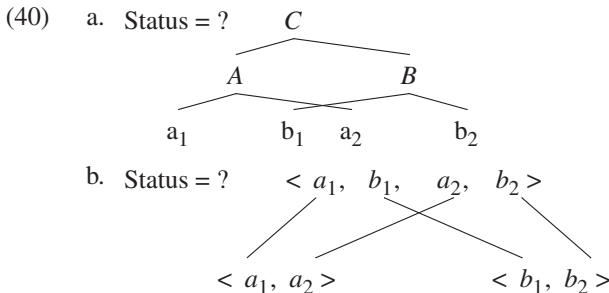
(39) Conservativity not respected: ER violation

    a.   * < John, likes, Sue, &, Bill, hates >

        < John, likes, Sue >   < &, Bill, hates, Sue >

    b.   * < John, gave, presents, &, Bill, kissed, Sue >

        < John, gave, Sue, presents >   < &, Bill, kissed, Sue >

    c.   * < John, gave, Sue, presents, &, Bill, kissed >

        < John, gave, Sue, presents >   < &, Bill, kissed, Sue >

The hypothetical mappings in (39) show how the ER is derived with respect to sharing on the right. The choice of right edge rather than left edge was made only for the purpose of using the simple English examples in (4) and is otherwise irrelevant. Conservativity is fully symmetric, and the derivation of the ER on the left follows the exact same lines. In section 3.5, we will illustrate the workings of our system in the case of LNR, in which the ER applies to sharing on the left.

3.3. Interleaving and Spellout

Edge Alignment is a weak condition: its use to replace Universal Alignment means that, when two complex daughters are combined, the linearization in the mother is no longer restricted to simple concatenation (as in (33b)) but could also be an interleaving of the two orders. Interleaving was crucial to our treatment of GNR in (38), but the weakened condition in (35) is quite general and would allow interleaving also in cases of External Merge:

(40) a. Status = ? C

           A B

        a_1 b_1 a_2 b_2

    b. Status = ? < a_1, b_1, a_2, b_2 >

        < a_1, a_2 >   < b_1, b_2 >

The possibility of interleaving is potentially problematic: outside of the special case of GNR, interleaving is not usually a possible linearization choice in natural language. It is possible—although we will not explore this direction in any detail here—that there is a general preference in grammar for noninterleaved structures. However, we believe that interleaving in MD-free configurations such as (40) would be ruled out as ungrammatical by factors that have nothing to do with linearization per se. Specifically, we propose that the ungrammaticality of (40) is due to the cyclic nature of derivations (Chomsky 2001, 2004; cf. Bresnan 1971). On certain assumptions about cyclicity, interleaving of the kind attempted in (40) will be blocked by the freezing of one of the merged constituents. Crucially, however, incompletely dominated material such as α in GNR will not be frozen, thus allowing the kind of interleaving required for GNR, as in (38).

According to the cyclic architecture, syntactic derivations are broken down into *phases*. At the end of each phase, on this view, an operation of *spellout* sends the current syntactic structure to the interfaces (specifically, to phonological and semantic interpretation). Spelled-out structure cannot be modified by subsequent steps in the syntactic derivation. In the case of the phonological interface, as stated informally in (41), spellout-yields a *string*, an immutable linearization object (see Uriagereka 1999, and cf. the notion of compaction in Yatabe 2001, 2012 and Beavers & Sag 2004 within the framework of HPSG). If A in (40) undergoes spellout, for example, its terminals—a_1 and a_2—will be frozen as a string, which we will notate as $<\underline{a_1, a_2}>$, underlining the relevant positions in the D-list. Separating these terminals by another element such as b_1 will be impossible in all subsequent steps in the derivation.

(41) Freezing by PF Spellout (Preliminary, informal version, to be revised in (44))
A syntactic structure transferred to the interfaces is mapped onto an object that cannot be modified by further operations. In the case of the phonological interface, the resulting immutable object is a string. If x immediately precedes y in the string at a certain point, x must immediately precede y at all subsequent points in the derivation.

In order to derive the ungrammaticality of the interleaving example in (40), we will ensure that either A or B has been spelled out by the time the two nodes are merged. To accomplish this, let us assume along the lines of Uriagereka 1999 that spellout occurs dynamically throughout the derivation (rather than only in designated categories, as in Chomsky 2001). In particular, we will make the stipulation, stated in (42), that whenever two constituents, such as A and B in our example, are merged, at least one of them has to undergo spellout and thus be frozen as a string.[22]

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[22] We chose (42) for presentational purposes, but other conceptions of local spellout are possible that would similarly block interleaving. We also note that (42) does not rule out additional spellout requirements. For example, in section 5, we will consider the additional requirement that spellout take place at certain fixed categories such as vP and CP.

(42) Stipulation Regarding Spellout
Whenever two constituents are merged, at least one of them has to undergo spellout.

Stipulation (42) addresses the problem of interleaving. Suppose, in our example, that (42) has been satisfied through the spellout of *A*. The output of spellout in this case is the string $<a_1, a_2>$. Although interleaving is still a possible mapping option, its output will be the D-list $<a_1,b_1,a_2,b_2>$. This result cannot be obtained without breaking the previous string, $<a_1, a_2>$, thus crashing the derivation.

In order to exempt α in GNR from being frozen, we follow Bachrach & Katzir 2007, 2009 in demanding spellout only of material that is *completely* dominated at that point. That is, as stated in (44) and relying on the definition of complete dominance in (43), spellout of *X* applies only to material that is *completely* dominated by X.[23]

(43) A node *X completely dominates* a node *Y* with respect to a set of nodes *C* if either of the following holds:
a. *X* is the only mother of *Y* in *C*; or
b. *Y* has a mother in *C*, and *X* completely dominates every mother of *Y* in *C*.

The set of all nodes completely dominated by *X* in *C* will be referred to as the *complete dominance domain* of *X* in *C*, written $CDD_C(X)$. In what follows we will assume that *C* is the set of all nodes that have been part of the derivation so far, and to simplify the notation we will write $CDD(X)$ instead of $CDD_C(X)$.[24]

(44) Freezing by PF Spellout   (Final version)
Let *X* be a node that is spelled out, and let *L* be the list obtained from the D-list for *X* by restricting it to those terminals that are in $CDD(X)$. If *y* immediately precedes *z* in *L*, then *y* immediately precedes *z* in the D-list of any node dominating *X*.

Whereas simple cases of interleaving, as in (40), are ruled out by the interaction of linearization and spellout, interleaving in cases of RNR and LNR, as required by our analysis, remains possible.[25] The reason is that α is not completely dominated in either of its containing constituents until the moment that they are merged together; consequently, it is not frozen into a string with the rest of the material in either constituent, leaving open the possibility of interleaving. As a concrete example, consider again the case of (37), and suppose that α = *Sue* is merged early on with its sister in each conjunct, yielding the VPs [VP likes Sue] and [VP hates Sue] before

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[23] We return to the interaction between spellout and linearization in section 5, where we discuss the possible relevance of these two factors to movement.

[24] The assumption that *C* is always the set of nodes constructed so far might be overly simplistic, as discussed in Bachrach & Katzir 2009:313, fn. 24, but we hope that the question of how *C* is chosen can be ignored for the present discussion.

[25] Differently from RNR and LNR, wrapping cases of GNR are restricted by spellout, as we discuss in section 4.2.

either of these constituents are merged with other material.[26] Even if IP_2 and IP_3 are both spelled out before being merged to yield IP_1, α is not frozen together with the preceding material in either conjunct. The D-lists for the two nodes are <*John,likes*, (*Sue*)> and <*and,Bill,hates*,(*Sue*)>, where parentheses on the D-list for X will mark terminals that are only incompletely dominated by X. Consequently, nothing interferes with the interleaving needed for the mapping in (38).

3.4. Identity in Structure and Linearization

For structures without MD, the D-list for any node X will always be some permutation over the terminals dominated by X: the base condition in (31) places X alone on the D-list for X, and the mapping condition in (35)—like its earlier version in (32)—guarantees that an occurrence of some z in a daughter of X will be mapped to a single occurrence of z in X; and crucially, in the absence of MD, z can appear at most in one daughter of X. The introduction of MD changes this guarantee of uniqueness and raises the possibility of multiple instances of the same element on the same D-list.

An unconstrained possibility of multiple instances on the same D-list turns out to be empirically problematic, and we believe it should be blocked or at least severely restricted. Evidence for this comes from the scope possibilities of quantifiers in coordinated structures, as in (14), repeated here as (45).

(45)   a. [Al bought __] or [Ed stole **every book on this shelf**].   ✓∀ ≫ ∨

   b. [Al bought every book on this shelf] or [Ed stole every book on this shelf].   *∀ ≫ ∨

   c. [Al bought every book on this shelf] or [Ed did ~~steal every book on this shelf~~].   *∀ ≫ ∨

Presumably, what allows the special scopal reading ∀≫∨ of (45a)—which can be true, for example, if there are five books on the shelf, of which Al bought two and Ed stole the remaining three (a situation in which (45b) and (45c) are false)—is its hierarchical structure rather than anything specific about the string generated from it at PF. But if it were generally possible to keep multiple occurrences of the same element within the same D-list, it is hard to see how to prevent the GNR structure for (45a) from also allowing the linearization in (45b). Because that would predict that (45b) would have the special scope reading ∀≫∨, we conclude that, at least in configurations such as (45a), placing multiple occurrences of the same element on the same D-list is not possible. A simpleminded way to state this requirement is as follows:

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[26] In addition to the derivational order mentioned here, the final structure in (37) admits several other derivational orders, and some of these orders will prevent interleaving when the two conjuncts are merged. In particular, if the left conjunct is constructed in full before α is merged with its sister in the right conjunct, α will be kept completely dominated for long enough to be frozen by spellout within the left conjunct. This, in turn, will prevent the crucial interleaving at the relevant stage. The availability of such derivational orders is not in and of itself problematic as long as nothing blocks derivational orders such as the one described in the main text.

(46) Linearization Well-Formedness Condition (Basic version; a weakening will be considered in (47))

    If *X* dominates a terminal *y*, then *y* appears on the D-list for *X* exactly once.

The well-formedness condition in (46)—which subsumes the Terminal Condition in (31)—will suffice for the discussion of GNR. In section 5, we will consider movement configurations and their possible analysis in terms of MD. In order to accommodate the relevant structures within the present linearization framework we will suggest a weakening of (46) to a condition stated as (47) that allows multiple positions in a D-list for a single incompletely dominated terminal. We now briefly introduce this weakening.

From the perspective of the Minimalist Program, linear order is not a property that the syntactic computation should be sensitive to, but we have proposed that linearization is computed recursively throughout the derivation. Why should that be so? We do not have a definitive answer. Anticipating our discussion of movement configurations in section 5, however, we wish to point out a way to understand the inclusion of linearization information in the syntactic derivation in view of the requirement of interpretability at the interfaces, and specifically the PF interpretability requirement of being mappable to a linear order. In a cyclic spellout framework such as our own, with its condition in (42), PF interpretability can be rephrased as a requirement that any syntactic node is potentially a phase node.[27] However, as we have just discussed, the spellout domain of a phase node *X* is restricted to *CDD*(*X*). This suggests the following modification of the well-formedness condition:[28]

(47) Linearization Well-Formedness Condition (Suggested modification, revised from (46))

    If $y \in CDD(X)$ then *y* appears on the D-list of *X* exactly once.

Elements that are only incompletely dominated by a node may now appear more than once on its D-list. As soon as an element is completely dominated, however, only one occurrence on the D-list is allowed. As we will see in section 5, this revision has implications for the treatment of linearization in movement-like configurations.

3.5. Summary and a Sample Derivation

To conclude the present discussion, let us summarize the stipulations we have made and demonstrate their interaction in a concrete example of GNR (specifically, LNR). We adopted the Linearization Mapping Condition, as formulated in (35), including

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[27] The same holds also for architectures such as in Uriagereka 1999, in which phasehood is not an inherent property of certain categories but is a consequence of adjunction.

[28] The tentative considerations discussed in the present section seem compatible also with a slightly different version of (47), one in which it is possible for an incompletely dominated node to not appear at all on a D-list. We have little to say about this alternative, but we note that given the compositional mapping of D-lists from daughters to mothers, it is hard to see how such absence of an element on a D-list can arise.

both Edge Alignment (35a) and Conservativity (35b). For cyclic spellout, we adopted Freezing by PF Spellout (see (44)) along with the Stipulation Regarding Spellout (see (42)). Finally, we adopted the Linearization Well-Formedness Condition (see (46)) but also noted that the alternative formulation in (47) could have been adopted instead.

   As a concrete illustration, consider again the LNR example (21) from Yatabe 2001, repeated here as (48) along with a diagram showing the D-lists of the main nodes in the structure.[29]

(48) a. [**Yonde**   ageta   hito] to [＿ agenakatta   hito]   ga   ita.
            read-GER give-PAST person and   give-NEG.PAST person NOM be-PAST
            'There were people who gave (him/her) the favor of reading (it) (to him/her) and people who didn't.'

   b.
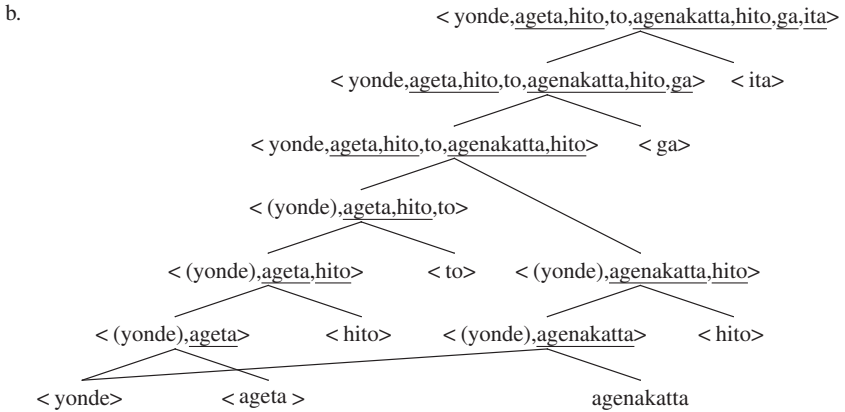
   As in earlier examples of GNR—such as the appropriate linearization in (38) for the structure in (37)—the mappings in (48b) all respect both Conservativity and Edge Alignment. Additionally, the diagram shows the effect of multiple, local applications of spellout, following the stipulation in (42): whenever two nodes are merged, at least one of them is frozen by spellout (marked here, as before, by underscores grouping together the elements on the D-list for the spelled out daughter). For example, in the topmost merger within the left conjunct, we have assumed that the leftmost constituent undergoes spellout; consequently, *ageta* and *hito* are grouped together and marked by a single underscore from the level of the left conjunct upward. Similar remarks apply to *agenakatta* and *hito* within the right conjunct.[30] Crucially, and as formalized in (44), incompletely dominated material is not spelled out. In the present case, this means that α = *yonde* will not be grouped together with other

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[29] To simplify the presentation, we ignore word-internal structure and treat each word as an atomic terminal. The coordinating conjunction is analyzed as right-adjoining to the leftmost conjunct (see, e.g., Zhang 2010:89–90).

[30] The choice of which daughter is spelled out at each merger was made arbitrarily in the present example.

conjunct-internal material in either conjunct, thus allowing the interleaving that is necessary to map the D-lists for two conjuncts to that of their mother node.

4. Some Predictions of the Present Account

4.1. *Accounting for the Structural Productivity of GNR and Its Sensitivity to the ER*

Our discussion of linearization has been framed entirely in terms of orderings and their compatibility. In particular, we have said nothing about the specific categories that are being linearized, where in the structure they occur, whether sharing occurs on the right or on the left, or the specifics of how the sisters combine. The generality of the linearization system allows it to make the right predictions for GNR: as mentioned in section 2, GNR is highly productive, applying in different positions, including across islands (sect. 2.1), and affecting different elements, including nonconstituents and elements below the word level (sect. 2.2). We also reviewed evidence that GNR is not specific to coordination (sect. 2.3) or to the right edge (sect. 2.7). This structural productivity, combined with the sensitivity to the ER (sect. 2.9), is exactly the profile that we would expect given our linearization-based account. All terminals of the syntactic structure get placed on D-lists, regardless of whether these terminals are embedded within islands, whether they are entire words or word-internal morphemes, and whether the constituents containing them are combined by conjunction. For any kind of element that gets placed on D-lists, we expect GNR to be possible as long as Conservativity, Edge Alignment, and the immutability of spelled-out strings are observed.[31] We noted in section 2.4 that we do not derive the exact distribution of identity and nonidentity effects, but as far as we can tell, neither do other proposals in the literature. As for the absence of center-node raising, we mentioned in section 2.8 that certain cases, such as (25a) on the relevant parse (= *[John met **Mary**] and [____ laughed]*) are ruled out as violations of the ER, on the assumption that the coordinator is visible for purposes of linearization; certain other cases, such as (25b) (= *[John met ____] and [**Mary** laughed]*), are prevented through spellout, along with other illicit instances of wrapping, as we will shortly discuss.

Within the present framework, exceptional wide scope of α, as in section 2.5, can be derived by letting incomplete dominance play a role not just at PF—as discussed earlier—but also at LF. In particular, if spellout freezes the scope of elements sent to LF, α can escape freezing as long as it is incompletely dominated (i.e., internally to the conjuncts) and take exceptional scope over the entire conjunction. See Bachrach & Katzir 2007 for an implementation of this idea. As for overt movement, Parallel Merge allows α to be incompletely dominated for many steps in the derivation. This means that in GNR, α—by not being frozen by spellout until the two containing

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[31] Note that αs such as those discussed in section 2.2 that do not generally move—and that are consequently problematic for movement accounts—do not pose a particular challenge to MD accounts such as the present one that allow α to remain in situ: α is only merged in its original positions and is never required to be merged also in other, higher positions where it is presumably disallowed.

constituents are conjoined—will be a possible target for movement even from within conjunct-internal spellout islands.

In the remainder of this section we discuss the derivation of restricted wrapping (see sect. 2.6).

4.2. A Limited Amount of Wrapping
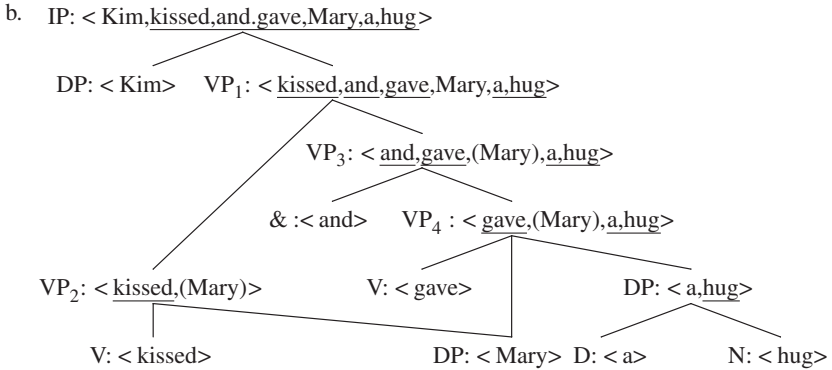
4.2.1. Deriving wrapping

Earlier we noted that Edge Alignment rules out the full wrapping of the elements dominated by one constituent with those dominated by its sister node, as in (36). Partial wrapping, on the other hand, in which only some of the elements dominated by a node are wrapped by those dominated by its sister node (as reviewed in sects. 2.6 and 2.7), is not generally ruled out by Edge Alignment. In fact, we suggested that such cases of interleaving, as in (40), are ruled out not by the linearization system itself—which has to allow interleaving in order to account for even the simplest cases of GNR—but rather through its interaction with cyclic spellout. This leads to an interesting prediction: in certain cases, delayed spellout through incomplete dominance should conspire with the weak requirement of Edge Alignment to permit partial wrapping. To see how, consider the following structure:

(49)   a.

b.
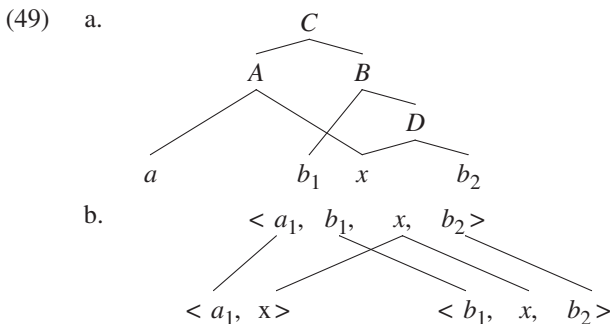
Edge Alignment is satisfied by (49): a is linearized before b_1, and x is linearized before b_2. Similarly, Conservativity is satisfied, because no internal ordering is changed. Finally, all three D-lists, $<a,x>$, $<b_1,x,b_2>$, and $<a,b_1,x,b_2>$, are linear orderings.

Given the discussion in sections 2.6 and 2.7, the ability of our system to generate such wrapping cases is a welcome result: wrapping is empirically attested in both righthand and lefthand GNR. As a concrete example, consider the following case of RNW:

(50) a. Kim kissed ＿ and gave Mary a hug.

b. IP: < Kim,kissed,and.gave,Mary,a,hug>

DP: < Kim>   VP$_1$: < kissed,and,gave,Mary,a,hug>

VP$_3$: <and,gave,(Mary),a,hug>

& :< and>   VP$_4$: < gave,(Mary),a,hug>

VP$_2$: <kissed,(Mary)>   V: < gave>   DP: <a,hug>

V: < kissed>   DP: < Mary> D: < a>   N: < hug>

As in earlier cases of acceptable GNR—for example, (38) for RNR and (48b) for LNR—the mappings in (50) all respect both Conservativity and Edge Alignment. As in (48b), the underscores in the various D-lists show the effect of multiple spellout according to (42). Note that neither VP$_4$ nor VP$_3$ is spelled out. If either of them were spelled out, the wrapping material *gave*, *a*, and *hug* would be grouped together to the exclusion of *Mary*, making the appearance of *Mary* in the wrapped position impossible in all subsequent steps. Given that nothing forces the spellout of either VP$_4$ or VP$_3$, however, wrapping remains possible.

4.2.2. *Wrapping is limited*

The acceptable cases in (18a) and (18b)—as well as other reported cases of RNW—involve structurally small coordinates (often bare VPs). We observe that once the coordinates in RNW are more complex, as in (51), their relative acceptability decreases, unlike the minimally different RNR versions, as in (52).

(51) ??[John knows an architect who always insists on reducing ___], and [Mary knows a contractor who can actually keep **renovation costs** down].

(52) [John knows an architect who always insists on reducing ___], and [Mary knows a contractor who can actually keep down **renovation costs**].

Our explanation for the decreased acceptability of (51) is based on spellout and follows the explanation for the usual ungrammaticality of interleaving. Each conjunct within (51) contains a complex noun phrase, which under common assumptions means it will undergo spellout before conjunction takes place. At that point, the shared material is not completely dominated within either conjunct. Consequently, it is not spelled out: the left conjunct will contain the string *an architect who always insists on reducing*, and the right conjunct *a contractor who can actually keep down*. Although the ordering of (51) according to (49) is licensed by the syntax, a

subsequent step will attempt to modify the string of the right conjunct to insert *renovation costs* between *keep* and *down*. Because strings cannot be modified, the derivation crashes. Similar considerations apply in the case of (17) (= *[*We have recently promoted ___], and [the HR manager who hired **Bob** is consequently very pleased]*) and (25b) (= *[*John met ___] and [**Mary** laughed]*), which explain their ungrammaticality. We can conclude, then, that RNW is possible as long as we can spell out the shared material in the same phase as the wrapping material in the rightmost coordinate. The existence of RNW suggests that the restriction in RNR should not be stated as a right-edge phenomenon but is in fact a special case of a more general restriction: the surface position of α cannot violate the relative order of α within *any* conjunct. However, the fact that RNW is possible only with structurally small conjunctions argues against linearization systems such as the one proposed by Wilder (1999, 2008) that license it across the board.

5. Linearization of Movement

As we have tried to show, the present account derives the linearization properties of GNR from general linearization principles applied to MD of the Parallel Merge variety rather than from any GNR-specific stipulations. In this section, we would like to complete the discussion by considering the linearization of Internal Merge, the other major variety of MD. We will demonstrate how the current account derives the differences in linearization between these two configurations.

Before we proceed, we wish to note that the discussion in the present section is quite tentative: differently from GNR, in which the combination of productivity and ER sensitivity allowed us to draw direct conclusions about the linearization of syntactic structures, the picture in the case of movement is considerably less clear.[32] Our main goal in the present section is to show that, if Internal Merge turns out to be the correct analysis of movement, the framework argued for here is not only compatible with the phenomenon but in fact provides a principled handle on what is otherwise a surprising aspect of movement—namely, the escape-hatch property of derived specifiers.
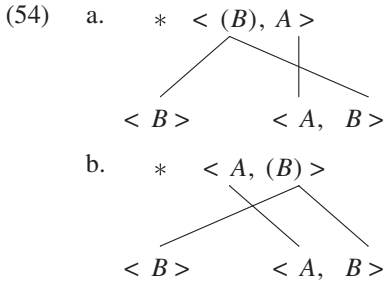
5.1. Linearization of Internal Merge

MD has been implicated not just in GNR phenomena but also in displacement, as in *wh*-movement. When a constituent is (re-)merged with a containing constituent, a movement-like configuration ensues (see Engdahl 1986, Chomsky 2001, 2004, Starke 2001, and Gärtner 2002, among other works):

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[32] In recent unpublished work, Danny Fox presents a general challenge for the treatment of movement in terms of Internal Merge. In section 5.4.3, we briefly discuss a more specific challenge, which targets the combination of Internal Merge and Parallel Merge.
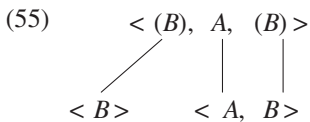
(53)   Internal Merge
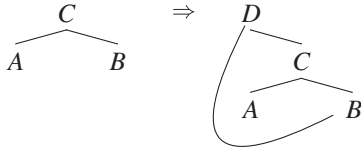
As with Parallel Merge, Internal Merge is problematic for the standard view on linearization. At first glance, Internal Merge appears problematic also for our own proposal. When *B* in (53) is internally merged with *C* to form *D* there are two alternative linearization mappings, schematized in (54). One of these mappings, (54a), violates Conservativity (note the crossing lines going up from the righthand daughter), whereas the other, (54b), violates Edge Alignment (the left edge of <*B*> does not precede the left edge of <*A,B*>).

(54)   a.   ∗   < (*B*), *A* >

         < *B* >   < *A*,   *B* >

       b.   ∗   < *A*, (*B*) >

         < *B* >   < *A*,   *B* >

In languages such as English that have overt *wh*-movement, it seems that we must allow for violations of Conservativity in the case of Internal Merge in order to obtain the surface linear order in (54a). Given that we have argued that Conservativity is inviolable, we need to explain what it is about Internal Merge that makes it look as if it violates this principle. We now proceed to present a potential explanation from Bachrach & Katzir 2009.

5.2. *Tying Multiple Instances on a D-List to Incomplete Dominance*

In (54a) and (54b) we presented two straightforward but problematic linearizations for Internal Merge. Notice, though, that there is another possible linearization mapping for Internal Merge that does respect both Conservativity and Edge Alignment:

(55)   < (*B*),   *A*,   (*B*) >

         < *B* >   < *A*,   *B* >

Obviously, at least in English, the output of Internal Merge does not exhibit two copies of the moved element:

(56) *$\textbf{What}_i$ did John eat $\textbf{what}_i$

Indeed, the linearization well-formedness condition in (46) explicitly rules out multiple appearances of a single item in the D-list of a completely dominating node. Recall, however, that it might make sense to exempt incompletely dominated items from this constraint, as stated in the variant of the linearization well-formedness condition in (47). Critically for the case of Internal Merge, the remerged constituent is not completely dominated by any of its mothers according to (43). For example, *B* in (53) is not completely dominated by *D* because *D* is neither its only mother nor does it completely dominate all its mothers. If *D* happens to be a phase, its derived specifier, *B*, would be exempt from spellout within the phase, thus deriving the escape-hatch property of derived phase specifiers, a property that is stipulated— although usually for all phase specifiers, and not just derived ones—in Chomsky 2001 and other works.

By allowing the remerged element *B* to appear twice in the D-list of its mother (55), we locally bypass Conservativity. After the following External Merge (of *E*, as depicted in (57a)), only one of the occurrences of *B* will be allowed to remain in the D-list of *F*, given that *F* completely dominates *B*.

(57)   a.

b.
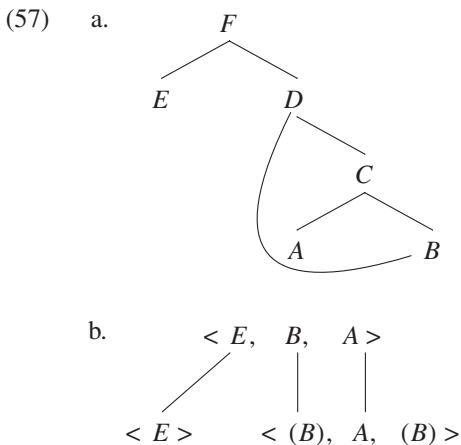
A missing part of the story is how the single occurrence of *B* on the D-list for *E* is chosen. This choice, conceivably subject to crosslinguistic variation, can have consequences for questions of locality and linear order in movement, but we do not explore these consequences here. Within the present discussion, we will simply provide a stipulation that regulates the transition from multiple occurrences of an incompletely dominated terminal on a D-list to a single occurrence of that terminal once it becomes completely dominated.

(58) Stipulation Regarding Choosing Occurrences
      If an element τ has multiple occurrences on the D-list for a node X, only one
      of these occurrences needs to be mapped to the D-list for X's mother(s).

Internal Merge, then, provides an escape hatch that permits a temporary satisfaction
of Conservativity: by making the remerged constituent incompletely dominated, it
allows each of its terminals to appear twice on the same D-list. Note that this escape
hatch is specific to Internal Merge and does not apply in Parallel Merge. The presence
of two occurrences of B in the D-list of D in (57) is made possible by the fact that D
dominates B (via two different routes) without completely dominating it. Given our
definition of complete dominance in (43), this configuration arises only in cases of
Internal Merge. In the case of Parallel Merge, as in (59), any node, such as C, that
dominates both occurrences of $\alpha = x$ also completely dominates it; consequently, at
no point in the derivation would there be two occurrences of α on the same D-list. In
other words, Parallel Merge provides no escape from Conservativity, thus yielding
the desired contrast between GNR and movement-like configurations.
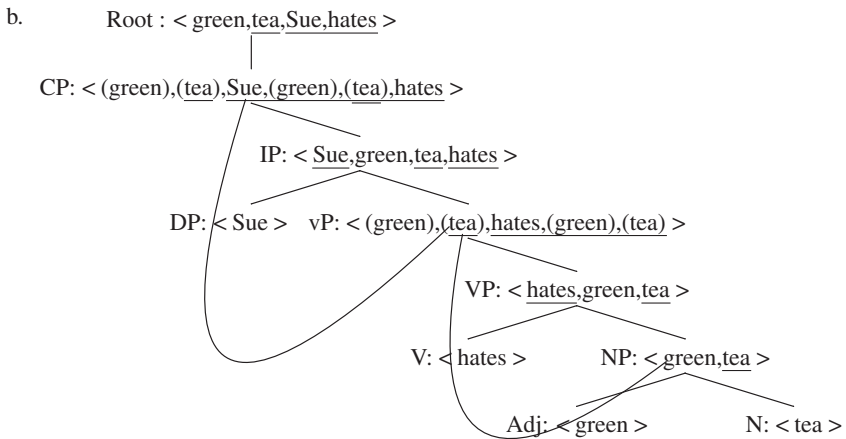
(59)
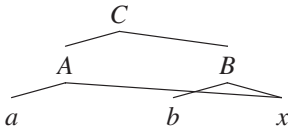
5.3. Sample Derivation

To summarize the modifications made to the system in the current section, we have
allowed Internal Merge as an analysis of movement-like configurations, and we
adopted the following two stipulations. First, we chose (47) instead of (46) as the
well-formedness condition on D-lists (as discussed in sect. 3.4, Parallel Merge
configurations alone did not allow us to choose between the two versions). Second,
we adopted (58), which allows one out of multiple occurrences of an incompletely
dominated terminal on one D-list to be mapped to the D-list of a parent node.
Let us illustrate the workings of the revised system with a concrete case of
movement. We use the topicalization example in (60a), and we assume that vP is a
phase node and that Spec,vP is an available landing site for the direct object. The
diagram in (60b) shows the main steps, marking incompletely dominated material and
spelled out material as usual.[33]

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[33] We ignore here the possible movement of the subject to Spec,IP from a lower position, a complication
we return to briefly in section 5.4.1.

(60) a. **[Green tea]**$_1$, Sue [$_{VP}$ t_1 [$_{VP}$ hates t_1]].

b.

Root : < green,tea,Sue,hates >

CP: < (green),(tea),Sue,(green),(tea),hates >

IP: < Sue,green,tea,hates >

DP: < Sue >   vP: < (green),(tea),hates,(green),(tea) >

VP: < hates,green,tea >

V: < hates >   NP: < green,tea >

Adj: < green >   N: < tea >

5.4. Further Predictions

We wish to outline several predictions of the modified system presented in this section. The changes introduced in order to account for Internal Merge make the linearization of elementary movement configurations straightforward, as we saw in section 5.3. The predictions for more complex configurations, on the other hand, are quite intricate, and we will only be able to sketch them briefly here.

5.4.1. Multiple specifiers

As discussed before, Internal Merge provides an escape hatch that can help a constituent avoid freezing by spellout. In particular, a moved constituent such as *A* in (61a) is not completely dominated by either of its mothers.

(61) a.

F

E

D   *C*

B   *A*

b.   < (A), D,   B,   (A) >

< A >   < D,   B,   A >
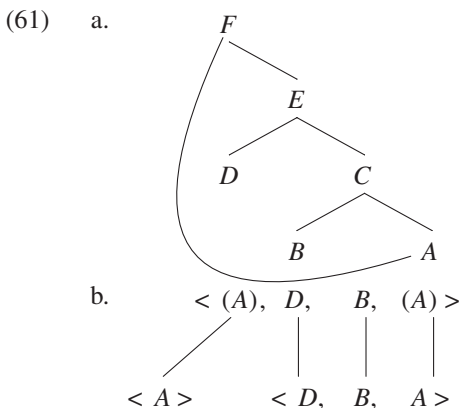
It is worth noting that the escape-hatch property is restricted to a specific point in the derivation. In (61a), for example, *A* is incompletely dominated by *F* (and *C*), but it will be completely dominated by *F*'s mother node at the next step in the derivation. If *F* is a phase node, *A* will be able to escape freezing by spellout by being internally merged as *F*'s daughter, as we have seen, but being internally merged either lower than *F* or above it will have no effect. This observation has implications for cases of multiple-constituent movement. Suppose, for example, that *D* in (61a) also needs to move to a higher position. At present, this will not be possible: *D* is completely dominated by the phase node *F* and will thus be frozen by spellout, regardless of any subsequent operations. If, on the other hand, we were to move *D* instead of *A*, it would be *A* that would be frozen:

(62)   a.

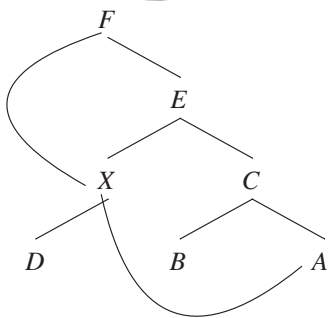
b. $<(D), (D),\ B,\ A>$

   $< D >$ $< D,\ B,\ A >$
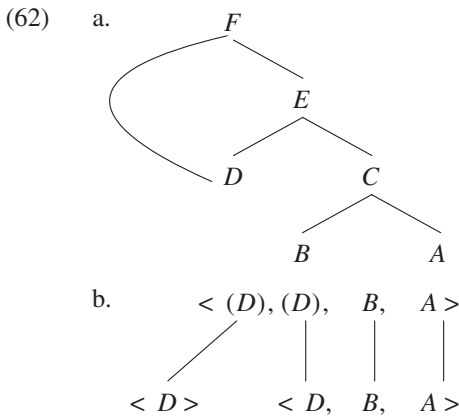
If *A* and *D* are both to escape freezing by the phase node *F*, they must either both internally merge as its daughters (if ternary branching is possible), as in (63a), or form a single constituent ahead of being internally merged, as in (63b).

(63)   a.
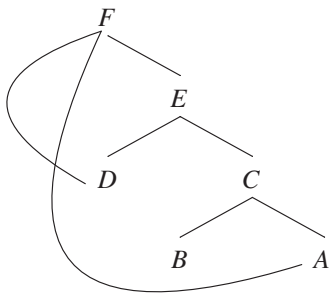
b.

In languages that allow multiple *wh*-movement, the impossibility of moving more than one constituent through a phase node (unless ternary branching is allowed) yields the prediction that long-distance multiple *wh*-movement—which necessarily passes through at least one phase node—will only be possible if the *wh*-elements are conjoined. Another prediction is that, if vP is a phase in English, and if ternary branching is impossible, then the subject must originate outside of the vP: otherwise, it would be impossible to move both the subject and, for example, an object *wh*-element across the vP.

5.4.2. *ATB, and why there is no covert ATB*

There are two ways in which ATB movement can be derived within the present architecture. If a GNR source is available, ATB can start with forming the relevant GNR structure, after which α is internally merged in a higher position. If the original structure does not respect the ER, a GNR source is not available. In this case, though, it might still be possible to derive ATB as long as there are no islands within either conjunct. On this alternative derivation, movement takes place independently within each conjunct, resulting in a structure that satisfies the ER as a case of LNR. Subsequent instances of Internal Merge move α further to its eventual landing site.[34]

As we saw in section 3.4, there is no covert ATB. On the present account, this is a direct prediction of the general architecture: if an element (such as 'every book on

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[34] Given that ATB without a GNR source is generally island sensitive, we must conclude that in this second kind of derivation, α in each conjunct does not know that it is also shared within the other conjunct. We do not know why this is the case. See Bachrach & Katzir 2009:313, fn. 24 for further discussion.

this shelf' in (14a)) appears twice, then there are two distinct constituents corresponding to it, one for each instance, rather than a single, shared one. And in that case, neither constituent can move above coordination, because that would violate the CSC.

5.4.3. *GNR + Movement—multiple occurrences of α?*

If α is shared (i.e., there is only one such object in the derivation), it should never surface in multiple occurrences, regardless of whether it is later internally merged. As noted independently by Grosz (2009) and by Yatabe (2012), this prediction is false:

(64) Who do you think, and who don't you think that John will see?

<div align="right">(Yatabe 2012:(15))</div>

It remains to be seen if and how an MD account of both GNR and movement can be modified to explain these facts.[35]

5.4.4. *MD and the Coordinate Structure Constraint*

Ross (1967:161) states the CSC as follows: "In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct." Taking into account the possibility of ATB movement, a straightforward restatement of the CSC within an MD framework would be as follows:[36]

(65) CSC in MD   (Simplistic version)
       If a constituent *X* is incompletely dominated within one conjunct and has an
       additional position in which it c-commands the entire conjunction, it must be
       incompletely dominated within all conjuncts.

The statement in (65) says that if *X* is moved from within one conjunct to a position above the entire conjunction, it must be moved from all conjuncts. Given the perspective offered by MD, however, another variant of the CSC suggests itself:

(66) CSC in MD   (Alternative version)
       If a constituent *X* is incompletely dominated within one conjunct, it must be
       incompletely dominated within all conjuncts.

---

[35] For proposals that treat GNR but not movement in terms of MD, (64) is not problematic. See, e.g., Wilder 2008:250, in which movement is analyzed using traces. Gračanin-Yuksek (2007, 2013) has offered an analysis of coordinated *wh*-questions (e.g., *Where and when did you eat?*) in terms of MD. Her account relies on Parallel Merge operating leaf-by-leaf rather than targeting nonterminals. In principle, such an approach could handle (64). However, Gračanin-Yuksek's account is tailored to derive only the coordinated-question phenomenon. As she notes, her account fails to generalize to other cases of RNR (or GNR more generally).

[36] We ignore here the distinction between moving an entire conjunct and moving from within a conjunct.

Differently from (65) and from the traditional statement of the CSC, (66) is not specific to configurations in which *X* has a higher attachment site above the conjunction. That is, it is not specific to movement at all. We believe that McCawley's (1982:101, fn. 11) observation—shown in (6) and repeated here as (67) — that GNR is sensitive to the CSC lends support to (66) over (65).

(67) *[Tom is writing an article on [Aristotle and ___]], and [Elaine has just published a monograph on [Mesmer and **Freud**]].

In (67), each of the larger, sentential conjuncts contains a smaller, DP conjunction. Focusing on these DP conjunctions, note that α = *Freud* is incompletely dominated within its own conjunct (i.e., within *and Freud*, both in *Aristotle and Freud* and in *Mesmer and Freud*). At the same time, it is not dominated at all within the other conjunct (*Aristotle* in the first case, and *Mesmer* in the second). In other words, both in the conjunction *Aristotle and Freud* and in the conjunction *Mesmer and Freud*, α is incompletely dominated within one conjunct but not within the other. On the account of GNR argued for in this paper (as in other MD accounts), α is shared in situ, with no need for a higher attachment site above the sentential conjunction. But if that is the case, only (66) successfully predicts the ungrammaticality of (67), whereas (65) fails to do so.

Similarly, (66) derives Ross's (1967:176–177) observation that in coordination with *n* coordinates, RNR must target α in each of the *n* coordinates:

(68) a. [John kissed ___], [Bill hugged ___], and [Frank pushed **Mary**].
     b. *[John kissed ___], [Bill hugged **Mary**], and [Frank pushed Sue].
     c. *[Frank pushed Sue], [John kissed ___], and [Bill hugged **Mary**].

If α is not shared within all *n* coordinates, (66) is violated, thus correctly predicting the result to be ungrammatical. The more traditional (65), on the other hand, is satisfied by a parse that leaves α in situ, which makes the ungrammaticality of such cases surprising.

6. Conclusion

GNR, with its structural productivity and linear sensitivity to the ER, is a rich testing ground for theories of linearization. We started by presenting what we consider to be the correct characterization of this pattern, providing new data—specifically, concerning the existence of LNW, the restrictedness of RNW, and the application of the ER on the left—to complete the characterization. We noted the challenge posed by the pattern to a variety of approaches and then presented the architecture of Bachrach & Katzir 2009 that captures it. This architecture combines weak but strictly compositional linearization with MD and multiple spellout. Importantly, it is not tailored for GNR but is rather a general account of structure linearization from which the specific characteristics of GNR (and in particular, the ER) follow. We have argued that the linearization of MD requires weakening of the principle of Universal

Alignment, and we have proposed the more lenient Edge Alignment instead. We then proposed that multiple spellout would rule out many of the unwanted structures allowed in by this weakening. At the same time, we have argued that Conservativity is inviolable. We explained the apparent violation of Conservativity by movement configurations as a consequence of incomplete dominance.

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